RCI-6 - Distributed Generation with Combined Heat and Power Systems (including Reducing Barriers)

Benefit/Cost of Reducing CO_2e:

Arizona: 16 MMt between 2007-2020; 1.6% of 2020 emissions; $-25/ton
Colorado: High reduction potential; Low cost
Oregon: 0.54 MMt between 2007-2025; 0.6% of 2025 emissions; Cost effective
New Mexico: 6.4 MMt between 2007-2020; 0.9% of 2020 emissions; $4/ton

Assessment: High Priority. Bin B. 19 out of 22 votes.

Combined Heat and Power (CHP) systems can double the energy output per unit of energy input, but there are significant barriers to implementation. Utah-specific analysis will be required to identify and create a strategy to advance this option.

This option might include removing regulatory and other barriers to CHP and/or providing incentives to encourage CHP applications. The option has long-term GHG reduction potential. It is difficult to implement where infrastructure is already in place and much easier to do where it is not in place, such as at "greenfield" sites. Access to information and cost of a local system are also considerations.

Because virtually all industries require electricity in addition to thermal energy, combined heat and power (CHP) projects have become popular strategies for reducing energy consumption. CHP refers to the sequential production of thermal and electric energy from a single fuel source.

In the CHP process, heat is recovered that would normally be lost in the production of one form of energy. For example, in the case of an engine configured to produce electricity, heat could be recovered from the engine exhaust and used for processes or water heating, depending in part on the exhaust temperature. The recycling of waste heat differentiates CHP facilities from central station electric facilities. The overall fuel utilization efficiency of CHP plants is typically 70-80 percent versus 35-40 percent for utility power plants. The basic components of any CHP plant include a prime mover, a generator, a waste heat recovery system, and operating control systems. Typically, CHP systems are configured around three basic types of generators: 1) steam turbines; 2) combustion gas turbines; and 3) internal combustion engines.